LOG OF BORING R-1A

PROJECT: Oliver Point and Oliver Reef Restoration Project CLIENT: Matagorda County, TX

COORDINATES: N 28° 38' 37.20"
W 96° 16' 59.80"
SURFACE ELEVATION:

DRILLING METHOD:
Dry Augered: to
Wash Bored: 0' to 30'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	N_{60}	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			Very soft SANDY CLAY (CL) w/ shell fragments & rocks		WOH/ 18"		49							52	
5			Very stiff gray & tan SANDY LEAN CLAY (CL) w/ ferrous nodules & streaks	(P)3.75											
			-w/ shells @ 6'-8'	(P)3.25			23	107	40	22	2.34	12	5		
10				(P)3.75											
			-w/ little recovery @ 12'-14'	(P)3.25											
15			-stiff reddishbrown @ 15'-17'	(P)1.75			24	100			1.28	9	7		
20			Medium dense tan SILTY SAND (SM)		10/6" 10/6" 17/6"										
25			-dense @ 23.5'-25'		13/6" 15/6" 21/6"		24							33	
			-medium dense & gray @ 28.5'-29'		9/6"										
30			Very stiff to hard tan & gray SANDY LEAN CLAY (CL)		12/6" 14/6"										
			Bottom @ 30'												
35															

COMPLETION DEPTH: 30 ft
DATE BORING STARTED: 10/21/2022
DATE BORING COMPLETED: 10/21/2022
LOGGER: Calib Wild
PROJECT NO.: 21.14.259

NOTES: Water Depth at 6' @ 10:05am.
Boring backfilled with soil cuttings.
SPT Hammer Type: Safety Hammer Drilling Equipment: Patoon rig

SUMMARY OF LABORATORY TESTS

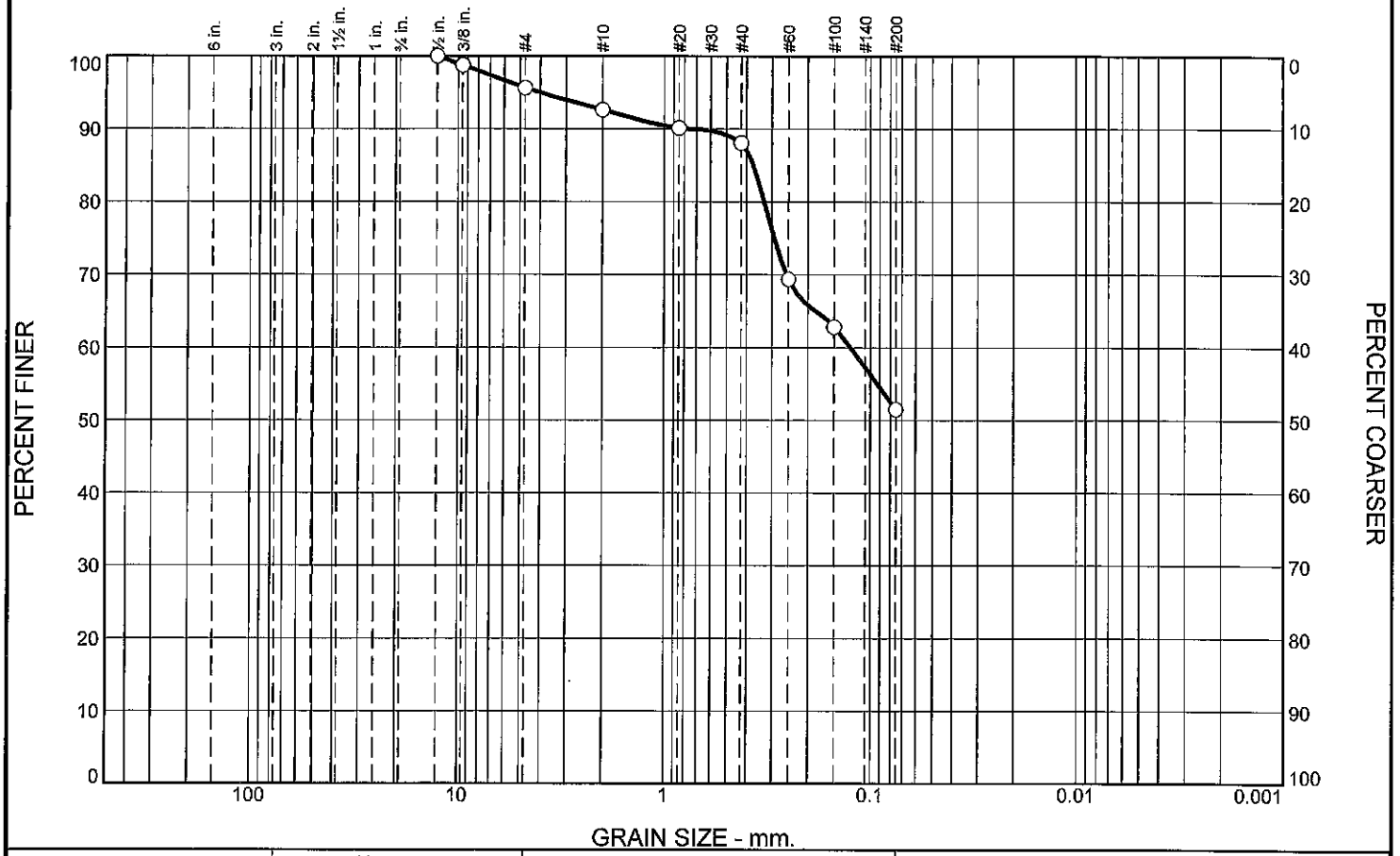
Project No. 21.14.259 Client: Matagorda County, TX

Project: Oliver Point and Oliver Reef Restoration Project

Boring No.	Sample No.	Depth (ft)	Pocket Pen. (tsf)	Torvane (tsf)	Soil Description	USCS	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plast. Index	Finer than #200 Sieve (%)	pH	Lab Vane Shear (tsf)	Uc/UU. Compr. (tsf)	Failure Strain (%)	Conf. Pres. (psi)	Failure Type
		12	1.75			CL	20.4	112.7	30	18	12							
		15	1.50		Gray and brown LEAN CLAY with SAND	CL	28.0	96.6							1.50	14.8	7.0	Multiple shear
		18.5																
		23.5			Reddish-brown SILTY SAND	SM	24.5					33.6						
		28.5																
		30																
R-1																		
		0																
		0.5																
		3.5																
		5																
R-1A																		
		0																
		0.5			Brown SANDY LEAN CLAY	CL	49.0					51.5						
		3																
		6	3.75		Reddish-brown and gray LEAN CLAY with SAND, ferrous	CL	22.6	106.6	40	18	22				2.34	12.1	5.0	Bulge
		8																
		9																
		12																
		15	2.75		Reddish-brown LEAN CLAY with SAND	CL	23.5	99.9							1.28	9.0	7.0	Multiple shear
		18.5																
		23.5			Tan SILTY SAND	SM	24.2					33.2						
		28.5																
		29																
		30																
R-3																		
		0																
		0.5			Gray and brown CLAYEY SAND; shell fragments	SC	33.7					37.0						
		3																
		6	2.50		Reddish-brown and gray LEAN CLAY with SAND	CL	22.7	104.3							1.44	14.8	5.0	Multiple shear
		9	2.00			CH	28.8	102.8	53	22	31							
		12	2.50			CH	21.8	111.6				91.8						
		15	2.00		Reddish-brown LEAN CLAY with SAND; calcareous	CL	21.9	101.8	31	18	13				0.81	15.0	7.0	Multiple shear

ASTM D422 Sieve Analysis

ASTM D422 & D1140



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.3	3.1	4.5	36.6	51.5	

Test Results (ASTM D422 & D1140)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
1/2	100.0			
3/8	98.8			
#4	95.7			
#10	92.6			
#20	90.1			
#40	88.1			
#60	69.4			
#100	62.8			
#200	51.5			

* (no specification provided)

Material Description

Brown SANDY LEAN CLAY

Atterberg Limits

PL= LL= PI=

Classification

USCS= CL AASHTO=

Test Remarks

Source of Sample: R-1A **Depth:** 0.5

Sample Date:

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: Matagorda County, TX

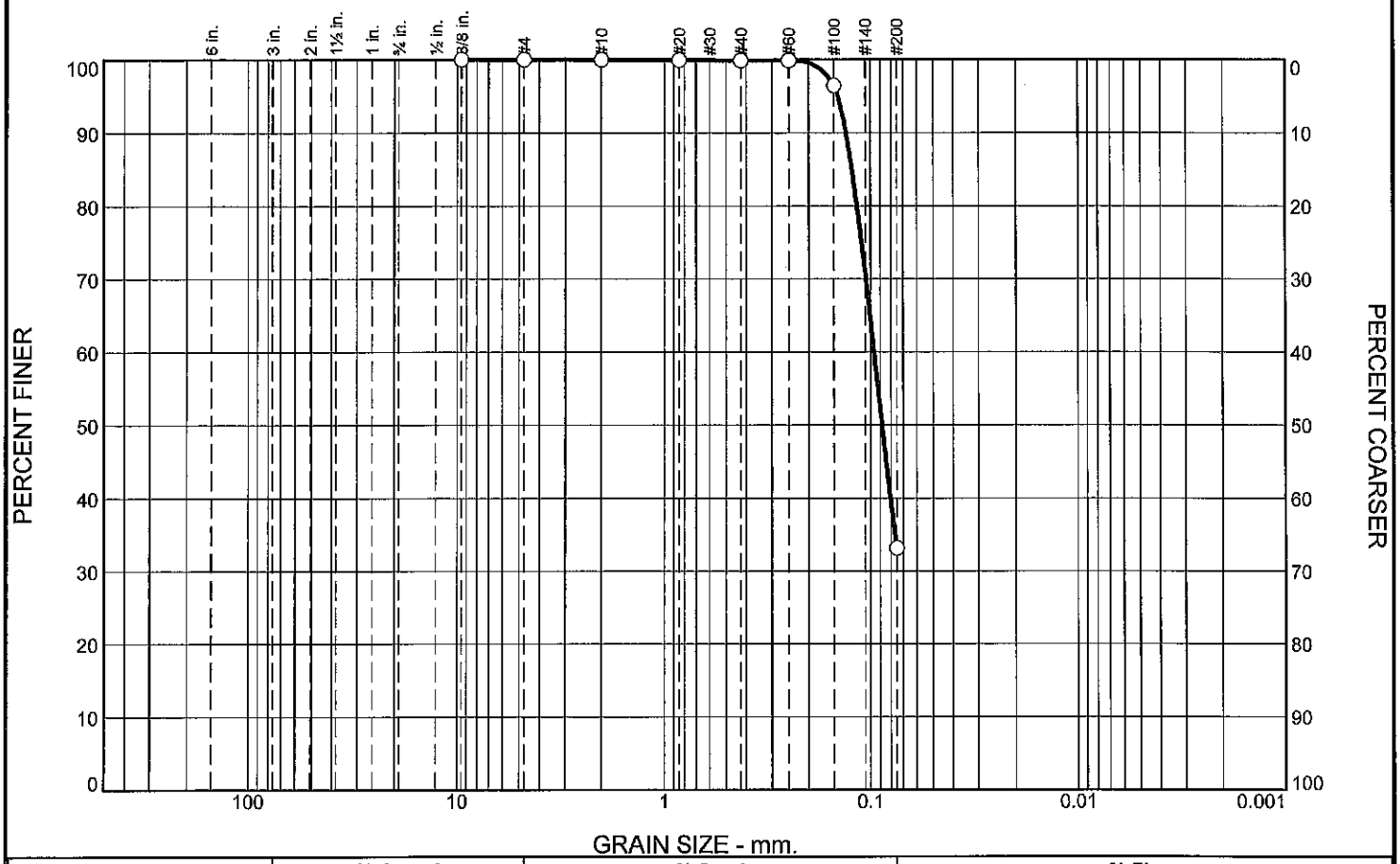
Project: Oliver Point and Oliver Reef Restoration Project

Project No: 21.14.259

Figure

ASTM D422 Sieve Analysis

ASTM D422 & D1140



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	66.7	33.2	

Test Results (ASTM D422 & D1140)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
3/8	100.0			
#4	100.0			
#10	100.0			
#20	99.9			
#40	99.9			
#60	99.9			
#100	96.5			
#200	33.2			

* (no specification provided)

Material Description

Tan SILTY SAND

Atterberg Limits

PL= LL= PI=

Classification

USCS= SM AASHTO=

Test Remarks

Source of Sample: R-1A **Depth:** 23.5

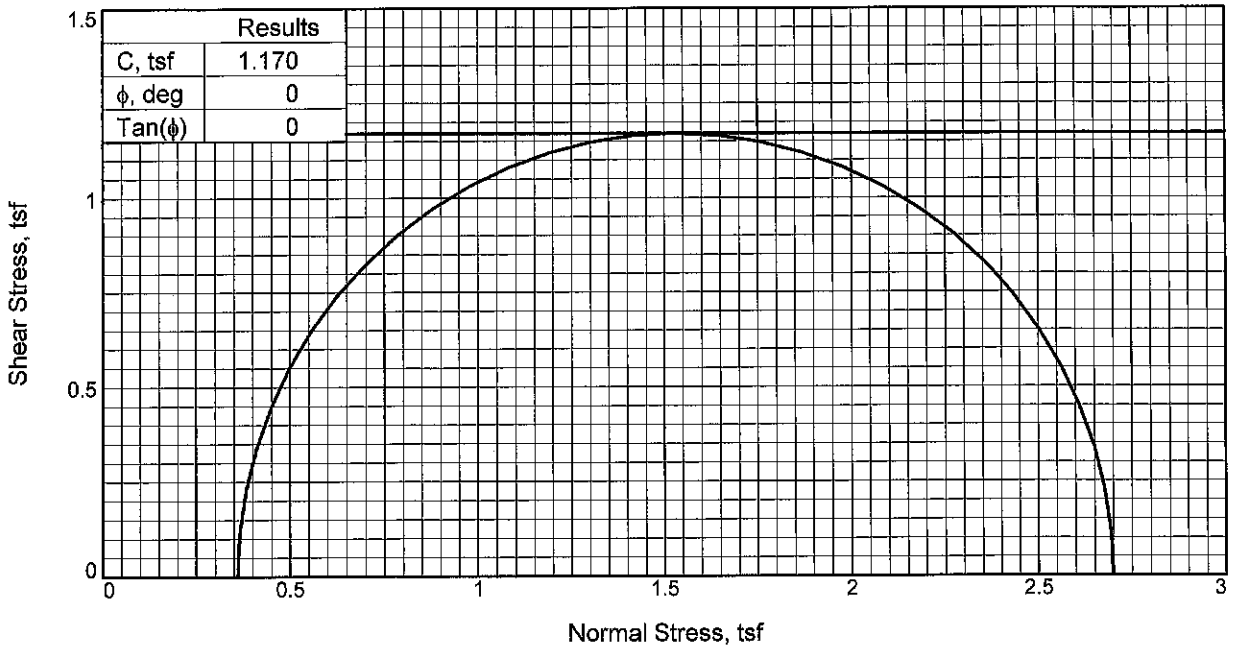
Sample Date:

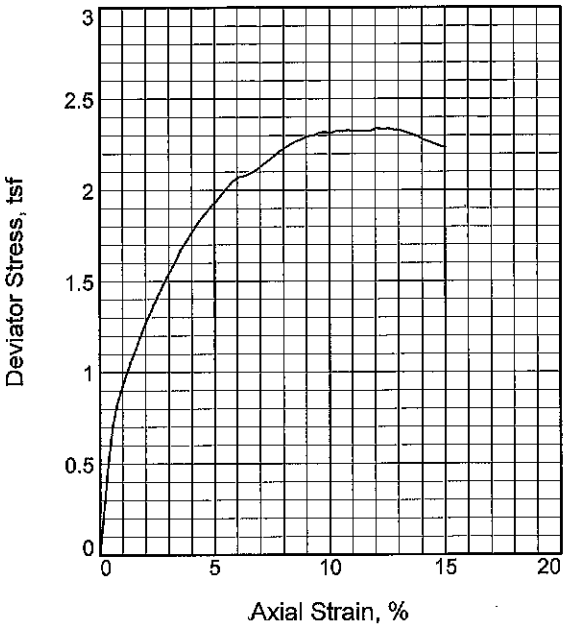
Tolunay-Wong Engineers, Inc. Houston, Texas

Client: Matagorda County, TX

Project: Oliver Point and Oliver Reef Restoration Project

Project No: 21.14.259 **Figure**





Sample No.		1
Initial	Water Content, %	22.6
	Dry Density, pcf	106.6
	Saturation, %	98.9
	Void Ratio	0.6393
	Diameter, in.	2.73
	Height, in.	5.91
At Test	Water Content, %	20.9
	Dry Density, pcf	106.6
	Saturation, %	91.4
	Void Ratio	0.6393
	Diameter, in.	2.73
	Height, in.	5.91
Strain rate, %/min.		1.00
Back Pressure, psi		0.00
Cell Pressure, psi		5.00
Fail. Stress, tsf		2.34
Strain, %		12.1
Ult. Stress, tsf		
Strain, %		
σ_1 Failure, tsf		2.70
σ_3 Failure, tsf		0.36

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray LEAN CLAY with SAND, ferrous

LL= 40 **PL=** 18 **PI=** 22

Assumed Specific Gravity= 2.80

Remarks:
Test method: ASTM D 2850
Failure type: Bulge

Figure _____

Client: Matagorda County, TX

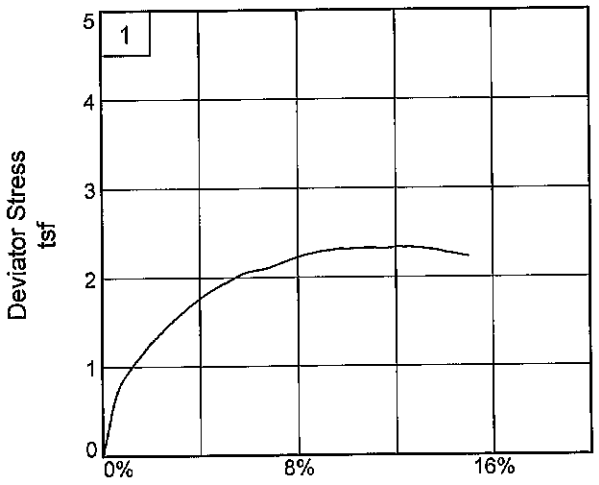
Project: Oliver Point and Oliver Reef Restoration Project

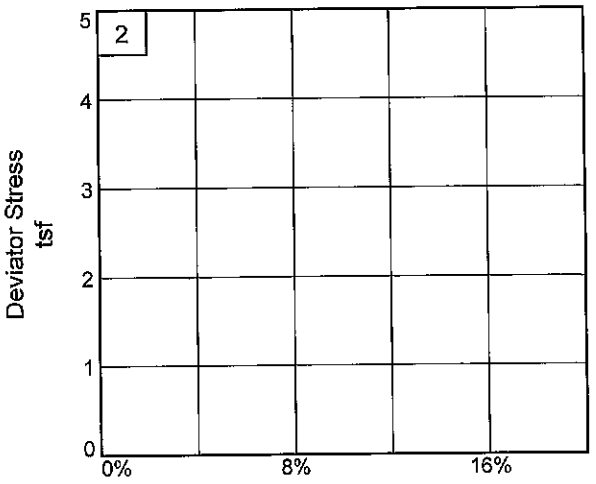
Source of Sample: R-1A **Depth:** 6

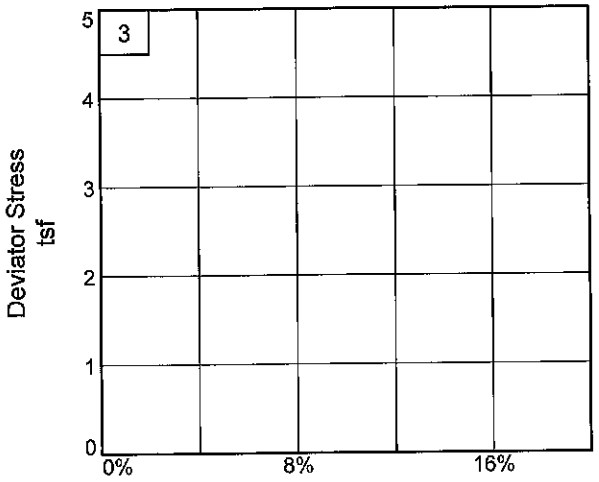
Proj. No.: 21.14.259 **Date Sampled:** 11/1/22

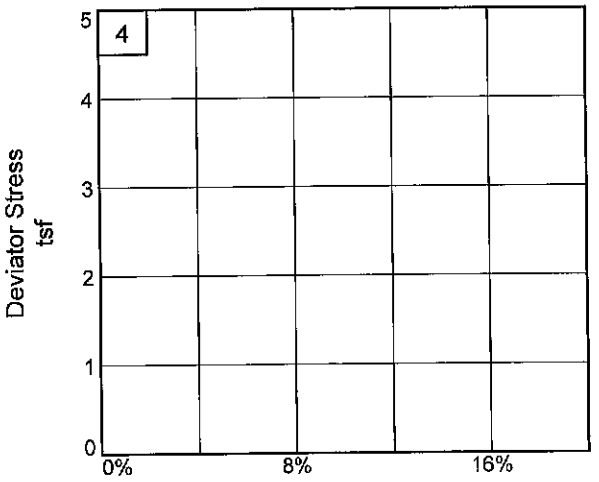
TRIAXIAL SHEAR TEST REPORT
Tolunay-Wong Engineers, Inc.
Houston, Texas

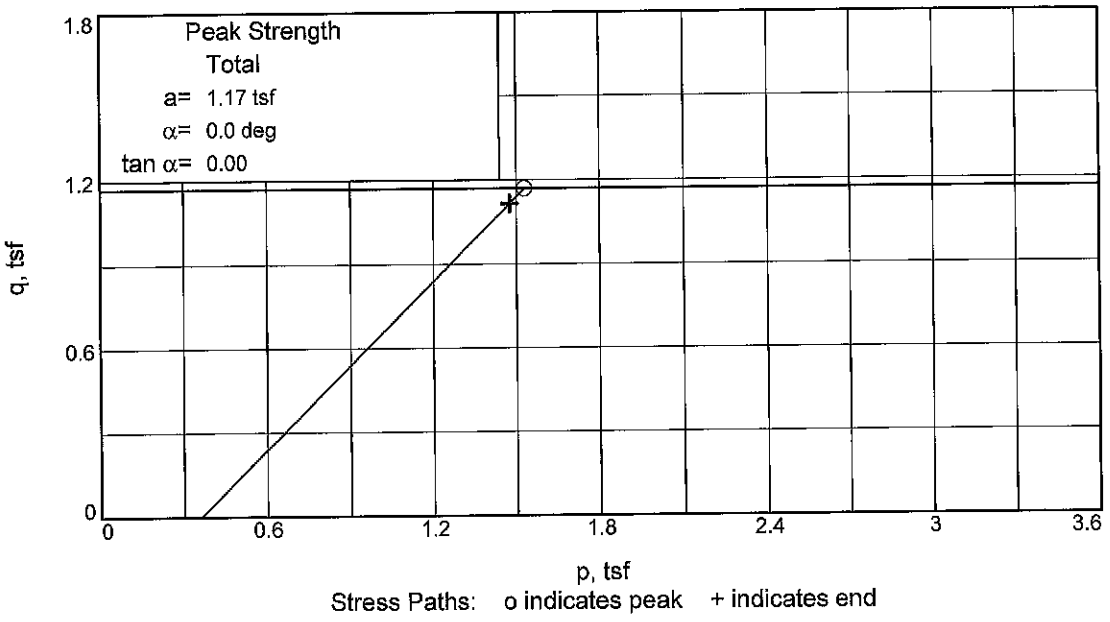
Tested By: DM









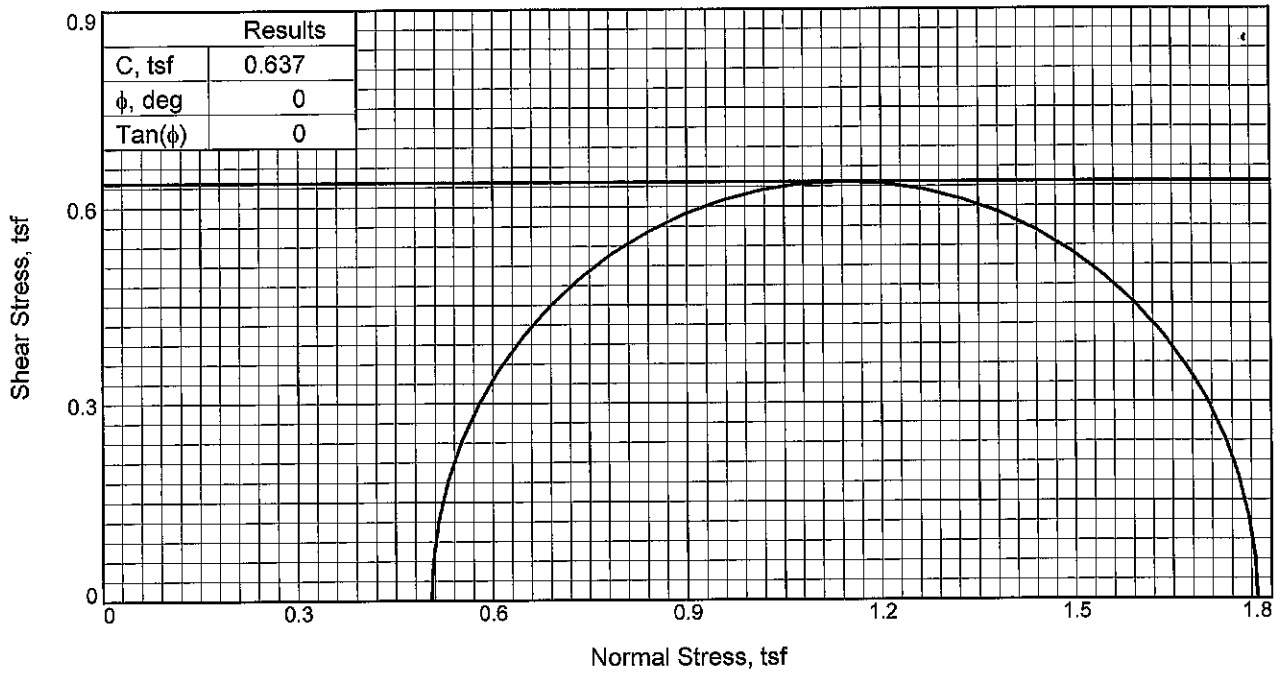


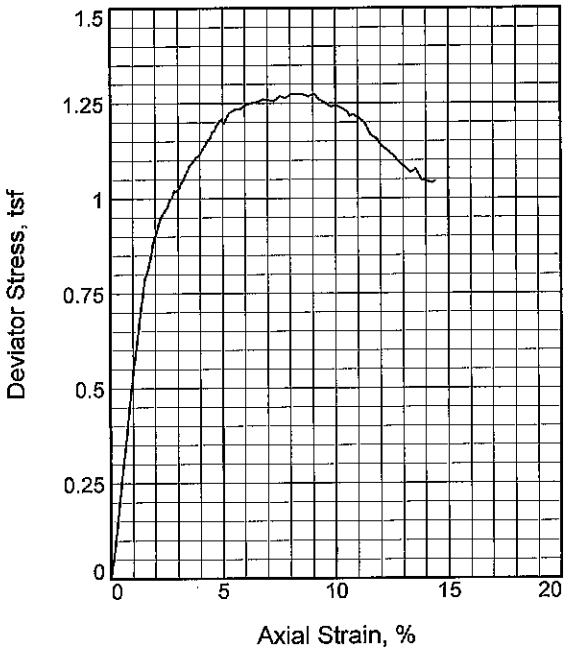
Stress Paths: o indicates peak + indicates end

Client: Matagorda County, TX
Project: Oliver Point and Oliver Reef Restoration Project
Source of Sample: R-1A **Depth:** 6
Project No.: 21.14.259 **Figure** _____

TOLUNAY-WONG ENGINEERS, INC.

Tested By: DM





Sample No.		1
Initial	Water Content, %	23.5
	Dry Density, pcf	99.9
	Saturation, %	92.4
	Void Ratio	0.6878
	Diameter, in.	2.75
	Height, in.	5.89
At Test	Water Content, %	19.5
	Dry Density, pcf	99.9
	Saturation, %	76.6
	Void Ratio	0.6878
	Diameter, in.	2.75
	Height, in.	5.89
Strain rate, %/min.		1.00
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		1.27
Strain, %		9.0
Ult. Stress, tsf		
Strain, %		
σ_1 Failure, tsf		1.78
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown LEAN CLAY with SAND

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D2850
Failure type: Multiple shear

Figure _____

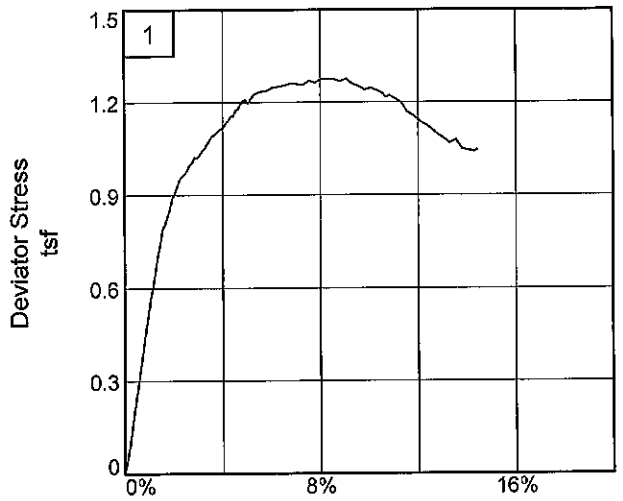
Client: Matagorda County, TX

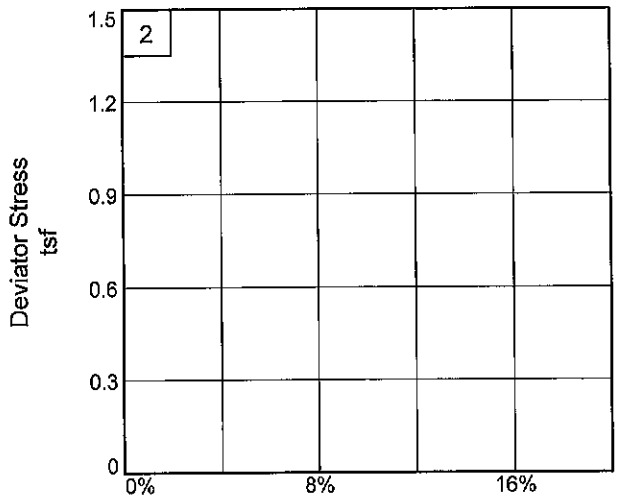
Project: Oliver Point and Oliver Reef Restoration Project

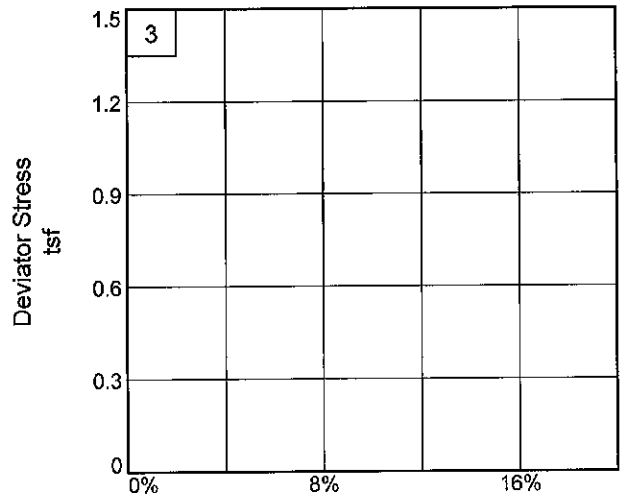
Source of Sample: R-1A **Depth:** 15

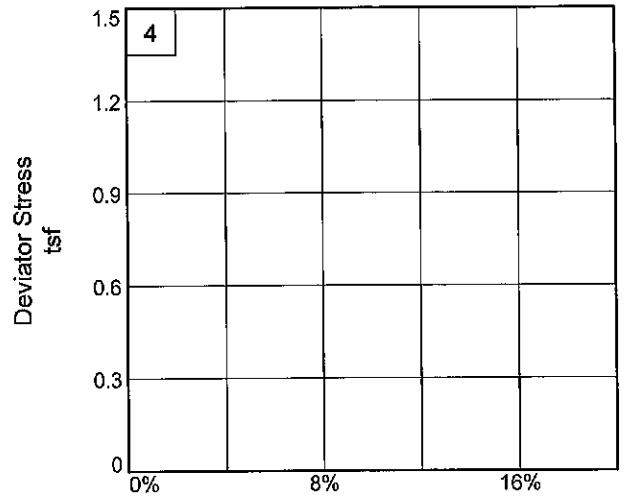
Proj. No.: 21.14.259 **Date Sampled:** 11/1/22

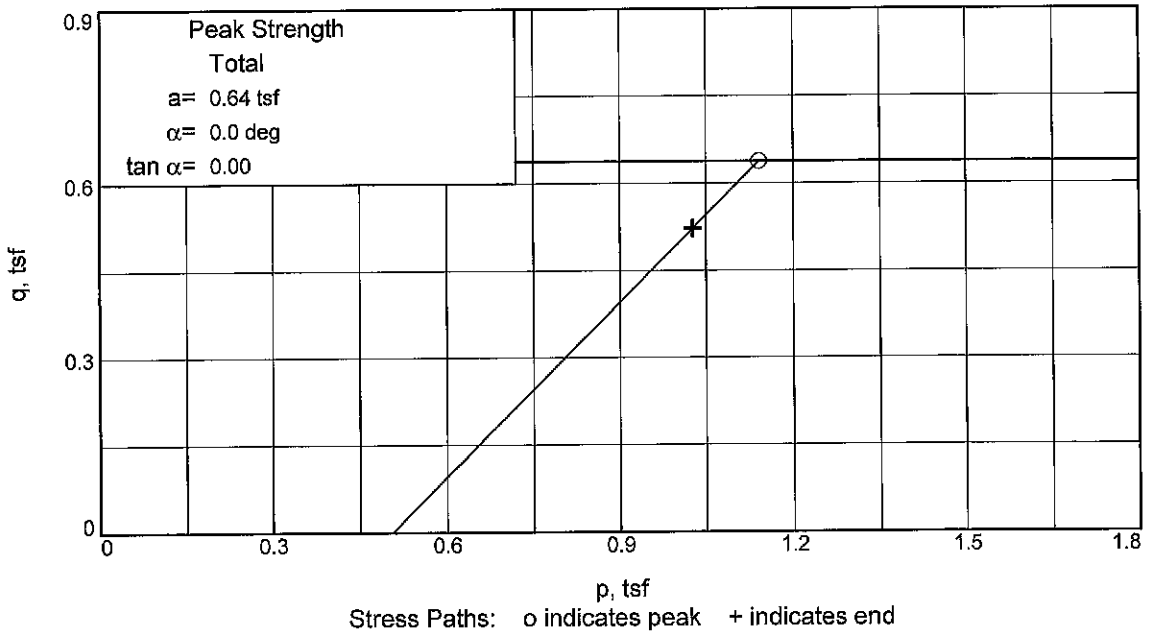
TRIAXIAL SHEAR TEST REPORT
Tolunay-Wong Engineers, Inc.
Houston, Texas











Stress Paths: o indicates peak + indicates end

Client: Matagorda County, TX
Project: Oliver Point and Oliver Reef Restoration Project
Source of Sample: R-1A **Depth:** 15
Project No.: 21.14.259 **Figure** _____

TOLUNAY-WONG ENGINEERS, INC.